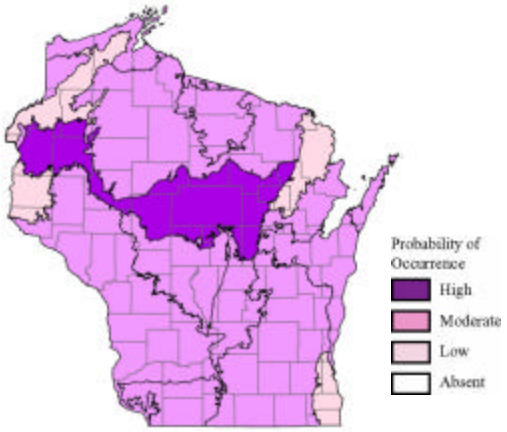
Eastern Red Bat (*Lasiurus borealis*)

Species Assessment Scores*

State rarity:	2
State threats:	4
State population trend:	3
Global abundance:	4
Global distribution:	3
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.1
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Coldwater streams
Forest Transition	Coldwater streams
Forest Transition	Coolwater streams
Forest Transition	Ephemeral pond
Forest Transition	Northern mesic forest
Forest Transition	Northern wet forest
Forest Transition	Northern wet-mesic forest
Forest Transition	Warmwater rivers
Forest Transition	Warmwater streams
North Central Forest	Coldwater streams
North Central Forest	Coolwater streams
North Central Forest	Ephemeral pond
Northern Highland	Coolwater streams
Superior Coastal Plain	Coldwater streams
Superior Coastal Plain	Coolwater streams
Western Coulee and Ridges	Coldwater streams
Western Coulee and Ridges	Coolwater streams

Threats and Issues

- Lack of information on basic ecology and population trends of the eastern red bat is one of the greatest threats to conservation of this species.
- Wind farms are a recent addition to the landscape in many parts of the United States. Bat fatality at wind turbines has been documented in all regions and in varying habitat conditions across North America. Annual mortality varies, but is conservatively estimated to vary from <2 to nearly 50 bats/turbine/year. Eastern red bats are one of the species killed most frequently. Current evidence suggests that bat mortality appears to be highest in or near forests, especially along ridge tops, moderate in open areas close to forest in the Midwest, and lowest in open grassland or farmland away

from forests. Because bats are long-lived, have low reproductive rates, and appear to be especially vulnerable to wind turbines, solutions are needed to prevent or minimize this new threat, whose cumulative impacts on populations of bats could be significant.

- Removal of roosting habitat (forested areas, wooded hedgerows, and areas with large shade trees) and loss of foraging habitat (mostly along the edges of pastures, crop lands, or other openings dotted with large deciduous trees) damages local breeding populations.
- Insecticide use in agricultural and forested landscapes may threaten bats through direct contact and indirectly through the reduction of target and non-target prey species. Insecticides are frequently sprayed during bat foraging periods, especially in the early morning, evening, or night, in order to target mosquitoes, avoid killing honeybees, and take advantage of quiet wind conditions. When directly exposed, bats may absorb chemicals through their lungs and skin, or by ingesting contaminated insects or polluted water (Clark 1981). Several studies link mortality of both juvenile and adult bats to organochlorine insecticides such as heptachlor, and dieldrin, which is linked to DDT (no longer used but still persisting in ecosystems) and its metabolites, DDD and DDE. Organochlorine insecticides are believed to kill mostly young bats when the chemicals, concentrated in the fat of the mother's milk, are passed to the pups or when flight begins and fat reserves from lactation are burned. Adult bats are most likely to be affected by fat-soluble toxins released when fat reserves are consumed during migration or hibernation (Clark 1981, 1988b, Clark *et al*. 1978a, 1978b).

Priority Conservation Actions

- Protection of foraging habitat, if disjunct from summer roosts and maternity colonies, may be most effectively gained through private or public landowner cooperation.
- Protection and restoration of summer roosting areas and sites are needed. These include both areas associated with older forests having a diverse age structure, and hedgerow roosting habitat along crop borders. Specific roosting preferences include areas with: 1) dense vegation above; 2) unobstructed space below, allowing bats to drop to gain flight; 3) no potential perches beneath, which could aid detection by birds or other animals; 4) dark-colored ground cover, minimizing reflected sunlight; 5) sufficient surrounding vegetation to protect from wind and enhance heat and humidity retention; and 6) southern exposure, where vegetation is the most dense and heat gain is the greatest (Bat Conservation International 2001).
- Plan controlled burning in deciduous forests to minimize mortality in areas where red bats are known or suspected to hibernate at ground level in the leaf litter (Bat Conservation International 2001).
- Support legislation that increases protection of bats during all phases of their life history, i.e., migration, foraging, nursery sites, and summer roost sites.
- Research is needed on most aspects of life history, including roosting, and foraging habitat requirements, population dynamics, population trends, and migration and dispersal patterns. An assessment of the habitats needed to support all life history stages and activities is needed before adequate stewardship programs can be devised.
- Inventories should be conducted in advance of large-scale habitat modifications that would result in the loss of older forest or removal of standing dead trees within areas known or suspected to contain this species.
- Outreach is needed to educate the public on bat biology and ecology, to reduce unfounded fears and myths, and to provide training for citizens to assist in monitoring efforts.
- A statewide bat management plan is needed to outline a coordinated and comprehensive approach to bat conservation in Wisconsin.